

ARKANSAS DEPARTMENT OF POLLUTION CONTROL AND ECOLOGY

MEMORANDUM

TO: David Price, EPA, Region VI
Cheryl Terai, Manager, CTA Branch

FROM: Tony Morris, Permits Geologist, Land Disposal Section
Mark Witherspoon, Permits Engineer, Supervisor-Land Disposal Section

DATE: September 21, 1983

SUBJECT: Closure plan for Olin Corporation
North Little Rock

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The following outline was developed by Department staff after Olin Corporation was unable to develop an environmentally acceptable closure plan. This outline represents a basic concept for the closure plan and should not be considered a detailed work plan.

I. Locate any possible excavations or disposal areas on the subject property. This can be accomplished by conducting the following basic research:

A) Research the history of the plant. The following information should serve as a basis for further actions:

- 1) The length of time the various processes at the plant were in operation.
- 2) Type of waste the processes have generated over the years.
- 3) The chemical nature of the waste.
 - a) Solubility of waste in water.
 - b) Specific gravity of waste.
 - c) Hazardous constituents and indicator parameters for each waste type.
- 4) Interviews with old employees about past disposal practices.

B) Surface resistivity surveys can be used to delineate the extent of excavations. These surveys should consist of longitudinal and latitudinal profiles systematically conducted over the entire "East forty" site. These resistivity data can also be correlated with bore-hole data to more exactly delineate the subsurface geology.

C) Magnetometer surveys should be used to confirm the location and extent of waste disposal areas.

D) Possible fill areas should also be located by researching old areal photographs taken over the various time periods when waste was disposed of on the site.

II. The monitoring plan for the site must include the following:

A) Definition of the geologic setting

- 1) Research on the regional geology and hydrology must be compiled to provide the general characteristics of the site and define outside influences that may affect potential waste migration.

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- 2) Numerous soil borings spaced on regular intervals across the site must be constructed to determine the depth and spatial extent of the clay unit. This data should be correlated with the surface resistivity surveys.
- 3) Deeper borings must be extended to determine the depth of the saturated sand underlying the clay. These borings should also be used to determine the nature of the lower confining unit. Piezometers should be installed in each boring to gather flow data from the saturated sand unit.
- 4) All borings should be cored and specific quantitative data generated on the physical properties of the material encountered (Laboratory permeability, Atterberg limits, moisture content, etc.). In-situ falling or rising head permeability tests should be conducted on the upper clay unit.

B) Hydrogeology of the underlying aquifer

- 1) A map of the piezometric surface from the previously mentioned borings must be provided.
- 2) Horizontal and vertical flow nets of the aquifer must be provided.
- 3) Transmissivity values for the aquifer must be generated. This information should provide an estimate of the amount of dilution of contaminants and potential for subsurface migration. The extent of the contaminant plume should be determined. Transmissivity values must be determined utilizing on-site pump tests.
- 4) A computer model indicating potential contaminant transport should be developed. This model should at a minimum indicate velocities, quantities, and time frames for waste migration.
- 5) An inventory of local water wells and associated sampling is needed to assess the current effects of the site on water quality. Seasonal effects on water quality should be predicted utilizing these data and the previously developed computer program.

C) The sampling program should include both groundwater and surface water monitoring on site and adjacent property.

- 1) The testing parameters should include the waste materials identified in I.A)2) above.
- 2) Surface water and representative soil samples in drainage ways and random samples across the site should be taken at various depths.
- 3) Groundwater sampling should be carefully coordinated with the hydrogeologic study in order to sample the most likely avenue of contaminant migration.

III. Corrective action for the contaminated areas should include the following points. Specific details can be provided only after a determination of the extent of contamination has been made.

A) Removal of contamination

- 1) Removal methods
 - a) Types of equipment necessary for removal of buried waste, soil, and groundwater.
 - b) Safety equipment required to protect workers.
 - c) Decontamination of equipment
- 2) Testing to insure entire extent of Contamination is

removed.

- 3) Specification of final waste disposal
- 4) Proper site closure after waste is removed

NOTE: If all the information generated proves conclusively that contamination is not occurring and the potential for contamination migration is minimal:

- B) On-site containment plan
 - 1) Justification of containment vs. removal
 - 2) Method for insuring no migration into underlying sand unit
 - 3) Maintenance program

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cc: Bob Blanz, Deputy Director, Program Operations